

1. Solve the given trig equation for all values of  $x$ .

$$\csc^2 x - \csc x - 2 = 0$$

2. Find  $\sin 2x$ ,  $\cos 2x$ , and  $\tan 2x$ , given that  $\tan x = -3/5$  and  $\sin x < 0$ .  
Hint: Draw a triangle

3. Find the exact value (in fraction form) of  $\sin(x - y)$  and  $\cos(x + y)$  if  $\sin x = \frac{4}{5}$  in Quadrant I and  $\cot x = 15/8$  in Quadrant III.

4. Use the Law of Sines to solve for all possible triangles if  $b = 10$ ,  $a = 9$ , and  $A = 35^\circ$ .

5. Prove that  $\cos(x - y) - \cos(x + y) = 2\sin x \sin y$

6. Simplify:

a.  $\frac{x^2 - y^2}{x^3 - y^3}$

b.  $\frac{2 + \frac{5}{x^2}}{\frac{7}{y^2} - 3}$

7. Solve for the variable. Find exact answers, no rounded answers.

a)  $\sqrt{x+5} = x-1$

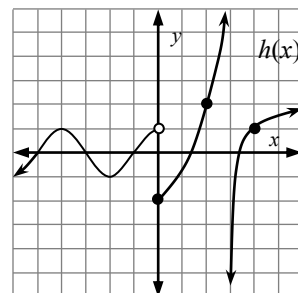
b)  $(x-7)^2 = 75$

8. Find the inverse of  $f(x)$

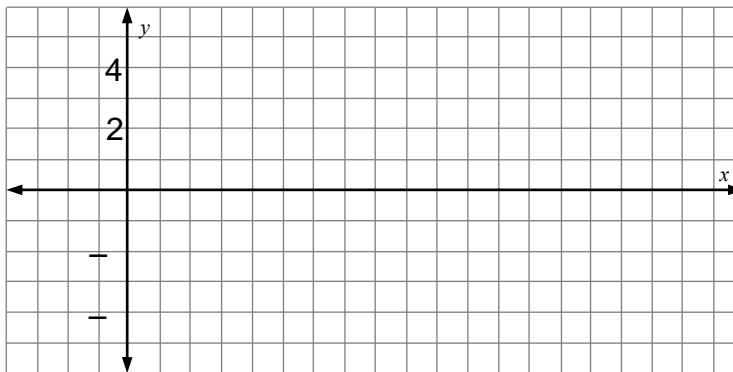
a.  $f(x) = \frac{4x-8}{3x}$

b)  $f(x) = 9^x$

9. Use the graph of  $h(x)$  at right to evaluate the following expressions.



- a.  $h(0)$
  - b.  $\lim_{x \rightarrow 0^-} h(x)$
  - c.  $\lim_{x \rightarrow 0^+} h(x)$
  - d.  $\lim_{x \rightarrow 0} h(x)$
  - e.  $\lim_{x \rightarrow \infty} h(x)$
  - f.  $\lim_{x \rightarrow -\infty} h(x)$
10. Graph  $y = -\sin\left(\frac{1}{2}(x + \pi)\right) - 3$ . State the amplitude, period, and any transformations of the function.



11. 6.3.1 #1
12. 6.3.1 #5